November 3, 2003

Mr. Kent Morgan
Assistant Director of Planning
City of Lincoln
555 South Tenth Street; Room 213
Lincoln, NE 68508

Dear Mr. Morgan:

Enclosed is a copy of the report on the GIS Visioning Workshop that was held by the City of Lincoln and Lancaster County on October 2-3, 2003. We have tried to incorporate all of the pertinent information that was captured during the activity. On behalf of Joe Eckmann and myself, we were delighted with the excellent participation and the eagerness shown by all of the workshop participants in their desire to create an enterprise GIS that services the full community of interests in Lincoln and Lancaster County. Some of the discussion and recommendations made during the workshop showed a good understanding of the path ahead.

To help you and the other workshop participants develop a series of next actions for GIS implementation, we have developed the following summary recommendations from the workshop report as well as our personal evaluation of your situation. Please keep in mind that this is not a comprehensive review of the situation, but rather a series of observations based on the workshop discussion and our experience working on successful GIS systems in other communities.

1) First, recognition must be given to the excellent GIS work that has already been accomplished by individual organizations in Lincoln: The City of Lincoln; Lancaster County; Lincoln Electric System; and the Lower Platte South Natural Resources District. Departments representing each of these organizations and others have developed a range of GIS databases and applications designed to meet departmental needs and requirements. Each of these departments should be commended for their leadership and commitment to improve efficiency, reduce cost and improve customer service. While the communication and willingness to assist others on a departmental basis has been outstanding, it appears that a more formal means of enterprise GIS development is needed. One of the real values of enterprise GIS systems is the ability to create data and applications once and use them many times. Without a formal mechanism for enterprise database development, multi-user access and the development of inter-departmental workflow applications designed to streamline processes and maintain core database elements, much of the potential and promise of GIS is lost.

2) Larry Zink, GIS Coordinator for the State of Nebraska, in his opening remarks to the workshop participants, challenged the group by saying, "You have accomplished much through early coordination and collaboration – don't forget to plan for this critical ingredient as you envision the future." Larry zeroed in on the next step required for the development of a Lincoln / Lancaster Enterprise GIS: the creation of a more formal GIS organization structure with dedicated GIS and IT staff. This structure would provide the necessary framework for:

(a) Establishing a formal policy and technical committees for GIS policy, technical, and budget decisions.

(b) Development of an Enterprise GIS Master Plan for the community.

(c) Determining GIS data standards and development of a metadata server capability as a card catalog into the communities' GIS data holdings.

(d) Creation of a seamless geodatabase warehouse repository of core GIS database elements in a common object-relational database environment. For example, this database should house:

(i) A unified land base
(ii) Aerial photography
(iii) Planimetrics
(iv)Geodetic control
(v) Address framework
(vi)Street centerlines
(vii) Infrastructure inventory
(viii) Administrative boundaries

(e) Developing standard geodatabase models for Land Parcels, Addressing, Transportation and Utilities.

(f) GIS web applications for intranet and internet deployment. Development of an "Internet Index and Viewer for Shared Geographic Data", which was identified as a "small win" administrative application by group # 1, would be an excellent early application. This web portal could provide easy web and application access to all of the most current data that is available in the community. Please look at the Geospatial One-Stop (www.geodata.gov) and the Geography Network (www.geographynetwork.com) as excellent examples of this technology.

(g) Generic GIS application development of inter-departmental applications with an emphasis on work-flow re-engineering to help streamline local operations. The Planning Department and Public Works have already begun Permitting and Asset Management initiatives that could easily be expanded to other departments. It's only through the successful implementation of such GIS applications in support of departmental mandates that the true promise of GIS will be realized by the overall community. Priorities should be established based on a basic return-on-investment analysis.

3) The following GIS vision statement was developed and received the majority of the votes during the workshop:

"CONNECTING MORE THAN THE DOTS."

While this vision statement recognizes the importance of GIS in organizational communications and spatial database development, it doesn't provide a clear sense of direction for Lincoln / Lancaster GIS activities. More work should be done to refine a GIS vision statement from the excellent list of candidates that would more clearly identify GIS goals and objectives.

4) From the results of the nominal group activity on GIS application requirements, it is recommended that workshop participants embark on the following major application and core database development activities. Each of these applications, if well designed, implemented, and managed, have the potential to provide a significant R-O-I (Return-On-Investment) for the community.

(1) ***DEVELOPMENT OF A GIS MASTER PLAN*** for implementation of an enterprise GIS capability. The plan should establish specific goals and objectives; document existing databases and applications; evaluate the accuracy, currency, and maintainability of all systems; define existing hardware and networking capabilities and areas for needed improvement; evaluate technology trends and opportunities for application and database integration; recommend technology standards and a program for work-flow reengineering; and identify and prioritize specific applications on the basis of their R-O-I (Return-On-Investment) to the community. An important part of the plan should also be to evaluate alternative organizational and staffing structures to support and maintain a GIS technical infrastructure. It is recommended that the GIS Master Plan be developed internally with the selective use of outside consultants.

(2) ***UNIFIED LANDBASE DEVELOPMENT*** – The number one application requirement identified by workshop participants was the integration of the City / County landbase into a seamless geodatabase. This would improve accessibility, accuracy, and would enable the landbase and associated situs address and parcel identification numbers to be maintained on a real time basis. It is recommended that a Land Records Geodatabase Model be developed to support this project. An excellent template is available at http://support.esri.com/index.cfm?fa=downloads.dataModels.filteredGateway&dmid=11 .

(3) ***INFRASTRUCTURE INVENTORY AND DATABASE DEVELOPMENT*** - Workshop participants also identified the development of a comprehensive Infrastructure Inventory System as a critical need for the Lincoln area. Lincoln Public Works has acquired the Carte'Graph integrated asset management system that has integrated GIS capabilities and could be expanded to support community-wide asset inventory, work management capabilities, and GASB 34 accounting.

(4) ***FORMALIZE A PROCESS FOR WORKFLOW MANAGEMENT*** – Workshop participants identified a need to develop a more formal process for workflow re-engineering to improve both inter-departmental and intra-departmental processes. Excellent software tools are available such as "Visio Enterprise" and NovaLIS Parcel Editor for improving operational workflows.

(5) ***IMPROVE GIS / CAD INTEGRATION*** – By improving workflows and utilizing a common geodatabase, CAD design files can be more easily integrated into a common spatial data structure. Through the use of data standards and layer definition GIS and CAD data can be easily interchanged.

(6) ***ESTABLISH A GIS TRAINING PROGRAM FOR CONTINUING EDUCATION***. A program should be developed to provide authorized training for GIS products and related computer technology. A training program about the availability of federal, state, and local GIS databases should also be created. Special emphasis should be placed on developing a reoccurring GIS educational plan for local elected officials and decision makers.

5) An incremental GIS implementation philosophy of creating "small win" GIS applications should be pursued. Applications with revenue enhancement potential should be evaluated for early implementation. Workshop participants designated the following list of applications as high priority applications. A detailed evaluation of each application should be made to determine the cost and benefits of the application prior to implementation.

LAND RECORDS MANAGEMENT:

- BRAD – Basic Records Access Database
- Integrated Parcel Identifier and Address Update
- Integration of the Geodetic Database
- Intranet and internet public access to the Parcel Database
- Expand the Zoning Administration and Planning System
- One-Stop Subdivision Tracking System
- GIS Integration to Building Permits

INFRASTRUCTURE MANAGEMENT:

- Fiber Optic System Modeling
- Infrastructure Inventory
- CAD Integration
- Transportation and Traffic Data Management System

- Customer complaints / customer service
- Field Crew Data Access
- GASB 34 Compliance
- Right-of-way and Easement Mapping
- Hydrant Information System

PUBLIC SAFETY AND PERMITTING:

- FIT – Floodplain Information Tracking
- GIS-enabled 911
- Automated Vehicle Tracking System
- Building Hazard Information and Simulation System
- Terrain Mapping and Topography for Public Safety

- Emergency Dispatch and Response

ADMINISTRATIVE:

- GOLD - Internet Index & Viewer for Shared Geographic Data
- Economic Development Application
- Geo-demographic Marketing for Public Facilities and Programs
- Facility Location and Usage Analysis
- Web-based Citizen Service Request System

GIS SUPPORT:

- Spatial Data Warehouse and Web Portal
- Address Framework Database

- Jurisdictional Boundary Management System

Kent, I hope these recommendations help in establishing a true enterprise GIS capability for the City of Lincoln and Lancaster County. We also hope that the cooperation and communication we witnessed during the workshop will enable all participants to begin steps toward the continued development of a community-wide GIS program with broad participation. City and County departments currently have the opportunity to enhance and expand their operational capabilities with GIS technology; this can be further extended with web technology to improve GIS access to many more users. Please thank Jeff McReynolds and the other LES staff for all their help hosting the workshop

If ESRI can provide any further assistance to you, please let us know. We have really enjoyed being partners in your success. Thank you for the opportunity.

Sincerely,

Environmental Systems Research Institute, Inc.

Stephen Kinzy
Regional Manager

Joe Eckmann
Account Manager

Enclosure: GIS Visioning Workshop Report